

We claim:

1. A simulated hunting application, comprising:
  - a hunting instrument capable of firing a projectile;
  - a data capture unit comprising a camera for capturing image data and a range finder for determining distance to target;
  - a display screen for displaying the image data;
  - trajectory calculating software capable of calculating the flight path and impact point of the projectile based on variable data entered by a user;
  - image editing software; and
  - a recording unit for storing the data captured by the data capture unit and the variable data;wherein the image editing software is configured to allow display of at least portions of a flight path of the projectile based at least in part on the calculations performed by the trajectory calculating software, so that the flight path of the projectile may be viewed on the display screen and an impact point on or near an intended target may also be viewed.
2. The simulated hunting application of Claim 1, wherein the hunting instrument comprises a bow and the projectile comprises an arrow.
3. The simulated hunting application of Claim 1, wherein the hunting instrument comprises a gun and the projectile comprises a bullet or pellets.
4. The simulated hunting application of Claim 1, wherein the image data comprises video data, and the image editing software comprises video editing software capable of generating frame inlays from portions of the flight path of the projectile and incorporating the frame inlays into the video data based on the calculations performed by the

trajectory calculating software program, and displaying the edited frames on the display screen.

5. The simulated hunting application of Claim 1, wherein the image editing software and the trajectory calculating software enable display of a site zero impact location on the display screen.

6. The simulated hunting application of Claim 1, wherein the impact point is derived using a predetermined algorithm indicating a change in pixel size given corresponding target distance changes.

7. The simulated hunting application of Claim 1, wherein the image editing software and the trajectory calculating software enable display on the display screen of images adjacent an intended target and interplay between such images and the projectile.

8. The simulated hunting application of Claim 1, wherein the image editing software and the trajectory calculating software provide the user with shot result information.

9. The simulated hunting application of Claim 1, wherein the shot result information comprises whether or not the shot was a “kill” shot.

10. The simulated hunting application of Claim 1, wherein the image editing software and the trajectory calculating software provide the user with information concerning target speed at the time of the shot.

11. The simulated hunting application of Claim 1, wherein the data capture unit further comprises a microphone for capturing audio data corresponding to the captured image and range-finding data.

12. The simulated hunting application of Claim 1, wherein the range finder comprises a laser range finder.

13. The simulated hunting application of Claim 1, further comprising a clinometer increasing shot accuracy by accounting for slope or tilt angle of the hunting instrument relative to the intended target.

14. The simulated hunting application of Claim 1, wherein the image data may be transmitted from the data capture unit to an electrical apparatus such as a computer or PDA.

15. The simulated hunting application of Claim 14, wherein the flight path of the projectile and the impact point of the intended target may be viewed on the display screen without first having to download the image data to the computer.

16. The simulated hunting application of Claim 15, wherein the display screen is enabled to provide multi-shot displays corresponding to a plurality of projectiles.

17. The simulated hunting application of Claim 1, wherein the display screen comprises a liquid crystal display.

18. The simulated hunting application of Claim 1, wherein a pre-shot adjustment is made by firing an initial, simulated shot, estimating one or more shot parameters based on analysis of the initial, simulated shot and its corresponding flight path, and adjusting one or more of the shot parameters prior to firing of the next simulated shot at the same intended target.

19. A simulated hunting apparatus, comprising:  
an archery bow having a bow string suitable for launching an arrow;  
a momentum suppression rod, a cavity and a piston moveable within the cavity, the piston being capable of providing back-pressure to the bow string upon release of the drawn string commensurate to that which an arrow imparts when actually fired from the bow.

20. The simulated hunting apparatus of Claim 19, wherein the momentum suppression rod has first and second ends, the first end being connected to the archery bow and the second end being connected to the bow string.

21. The simulated hunting apparatus of Claim 19, wherein the momentum suppression rod is mechanically-actuated and comprises a friction rod.

22. The simulated hunting apparatus of Claim 19, wherein the momentum suppression rod is hydraulically and/or pneumatically actuated.

23. The simulated hunting apparatus of Claim 19, wherein the cavity comprises a cavity wall and inner and outer chambers separated by a displacement valve, the inner chamber housing the piston, and the outer chamber including first and second compartments, the first compartment containing a compressed gas and the second compartment containing a liquid.

24. The simulated hunting apparatus of Claim 23, wherein the displacement valve is adjustable from the outside of the momentum suppression rod to allow varying rates of rod release and back-pressure.

25. The simulated hunting apparatus of Claim 19, further comprising:  
a data capture unit comprising a video camera for capturing video data and a range-finder for determining distance to target;  
a display screen for displaying video images;  
a trajectory calculating software program capable of calculating the flight path and impact point of an arrow based on a series of variables entered into the program;  
a video editing software program; and  
a recording unit for storing data captured by the data capture unit and data

entered into the trajectory calculating software by the user;

wherein the video editing software program is capable of displaying portions of a flight path of the projectile based on the calculations performed by the trajectory calculating software program, so that the flight path of the projectile may be viewed on the display screen and an impact point on or near an intended target may also be viewed.

26. The simulated hunting apparatus of Claim 23, wherein the compressed gas is nitrogen gas.

27. The simulated hunting apparatus of Claim 23, wherein the liquid comprises a low viscosity oil.

28. The simulated hunting apparatus of Claim 23, wherein the piston, the inner and the outer chambers, and the cavity wall are machined to substantially minimize rod flex and distortion.

29. The simulated hunting apparatus of Claim 19, wherein the piston is a multistage piston capable of extending in multiple portions.

30. The simulated hunting apparatus of Claim 29, further comprising inner extension limiters which engage outer extension limiters at each stage of extension of the piston, thereby allowing each progressive piston portion of the multistage piston to extend when the previous portion has substantially reached its maximum extension point.

31. The simulated hunting apparatus of Claim 19, wherein the momentum suppression rod includes a charge coupled device camera.

32. The simulated hunting apparatus of Claim 19, further comprising one or more proximity sensors located in the cavity.

33. The simulated hunting apparatus of Claim 32, wherein the proximity sensors

have a reaction time in the range of about 0.2-0.9 milliseconds.

34. The simulated hunting apparatus of Claim 20, wherein the second end of the momentum suppression rod extends toward the bow string in a direction generally normal to the bow string and generally along a centerline of travel of the bow string.

35. The simulated hunting apparatus of Claim 23, wherein release of the drawn bow string causes the piston to reenter the inner chamber and forces the liquid back through the displacement valve and into the outer chamber.

36. The simulated hunting apparatus of Claim 23, wherein release of the drawn bow string causes the piston to reenter the inner chamber and recompresses the gas, thereby supplying sufficient back-pressure on the bow string to sufficiently reduce shock and vibration on the bow necessary to avoid damage to the bow or injury to the user.

37. The simulated hunting apparatus of Claim 19, further comprising an altimeter.

38. A method for a hunter to use a simulated hunting application, comprising the steps of:

aiming a hunting instrument capable of firing a projectile at an intended target, the hunting instrument comprising a data capture unit for capturing image data and a range finder for determining distance to target, and a display screen for displaying the image data;

calculating a flight path and an impact point for the projectile based at least in part on variable data entered by the hunter, using trajectory calculating software associated with the hunting instrument;

storing the data captured by the data capture unit and the variable data using a recording unit;

editing the image data using image editing software to display at least portions of a flight path of the projectile based at least in part on the calculations performed by the trajectory calculating software, so that the flight path of the projectile may be viewed on the display screen and an impact point on or near the intended target may also be viewed.

39. The method of Claim 38, further comprising the step of the hunter making a pre-shot adjustment by firing an initial, simulated shot, estimating one or more shot parameters based on analysis of the initial, simulated shot and its corresponding flight path, and adjusting one or more of the shot parameters prior to firing of the next simulated shot at the same intended target.